

Key SIWG Phase 3 Discussion Issues

Compiled from SIWG Phase 3 DER Functions: Recommendations to the CPUC for Rule 21, Phase 3 Function Key Requirements, and Additional Discussion Issues, released March 2016

Background: The SIWG submitted its recommendations for Phase 3 Advanced DER Functions in March 2016. These advanced functions represent a higher, more forward-looking level of DER monitoring and control, in which DERs can be leveraged via Phase 2 communications to provide a material response to certain grid conditions. These advanced functions include commanding DERs to connect or reconnect; setting or limiting real power generation; increasing or decreasing real power output in response to voltage or frequency excursions; providing reactive current support in response to dynamic variations in voltage; and scheduling, to allow DERs to autonomously provide an optimal operational response to a triggering grid condition, such that individual commands do not have to be sent each time the need arises.

D. 16-06-052 requires the investor-owned utilities (IOU) to file Phase 3 revisions or in the absence of consensus on certain issues, a status report and work plan on December 20, 2016. Below are key discussion issues that have been raised by the SIWG and may need further resolution before these requirements are included in electric tariff Rule 21. Please refer to the SIWG Phase 3 document, which can be found in the appendix of D. 16-06-052, for more information.

NOTE: *The discussion issues below contain references to outstanding questions about compensation. Please keep in mind that these questions are outside the scope of the SIWG and this workshop.*

1. Monitor Key DER Data

- When and under what conditions will utilities require communications either during or after the interconnection process, given the unknown future grid issues and since there may be financial implications? Should utilities identify what communications are required during the interconnection process or can that decision also be made later? What happens if the data exchange requirements change? This data could also be used in future DRPs to determine locational and functional benefits.
- IEEE 1547 includes draft conditions on whether functional requirements are to be met at the PCC or at the DER's Point of Connection, based on aggregated DER size and average load. Since monitoring requirements will need to reflect the functional requirements and will be required over the life of the DER systems and since smaller DER systems may be required to shift to meeting the functional requirements at the PCC over time, how will the monitoring requirements change over the life of DER systems?

- Utilities will need to specify the retrieval rates for collecting the data for different scenarios. Data from some DER systems may be needed in “real-time” (seconds), but most will only be needed over many minutes, hours, or even days.
- Communication protocols may be different for real-time (e.g. DNP3) versus non-real-time (e.g. IEEE 2030.5 or other IoT protocol).
- Communication media requirements and constraints will also need to be specified. In particular, which DER may use Internet communications and which may have more stringent requirements for timeliness and security?
- Are there specific monitoring requirements for energy storage systems while they are charging? What about non-exporting DER and storage systems, which may mask loads or become significant loads?

2. DER Cease to Energy and Return to Service Request

- Will the IEEE 1547 definition for “Cease to Energize” be adopted, namely “Cessation of active power output at the PCC”?
- Is there ever a need to issue a “disconnect command” that isolates DER from the grid? For larger DER should the utility be able to require a galvanic disconnect? Manually operated disconnects can also be used.

3. Limit Maximum Real Power Mode

- IEEE 1547 includes this requirement. Should those IEEE 1547 requirements be used for Rule 21?

4. Set Real Power Mode

5. Frequency-Watt Emergency Mode

- IEEE 1547 includes this requirement. Should those IEEE 1547 requirements be used for Rule 21?
- Should it also apply to energy storage or other DER that can increase active power on frequency rises?

6. Volt-Watt Mode

- This may be a very useful function if volt-VAR is limited due to excessive reactive power or other constraints. DER systems in areas of high voltage may be affected more by this function and therefore may seem to be unfairly impacted. Therefore, as with most other functions, compensation methods will need to be addressed.

7. Dynamic Reactive Current Support Mode

- Although included IEEE 1547, it has been left open to utilities and others to define its exact capabilities and parameters. Should these definitions be developed for Rule 21?

8. Scheduling Power Values and Modes

- Schedules have not been discussed in detail and need more in-depth definitions of what they may or may not be required to do. For instance, should they be able to schedule the enabling/disabling of autonomous modes?
- DER systems will need to have accurate time and will need to include time synchronization methods to an adequate accuracy to respond to schedules. Is this a problem? Should time accuracy be included in Rule 21, such as within 10 seconds for most DER? It is understood that with communications, time synchronization is possible.

9. Cyber security requirements

- Both IEEE 1547 and Rule 21 expect to require cyber security, but in both cases, the actual requirements are high level. Should more detail be added, such as criticality of certain DER (size, location, use) that will warrant higher levels of security?